Fermilab

SDC SOLENOID DESIGN NOTE #193

TITLE: Status of SSCL/Experimental Facilities Department

AUTHOR: R. Richardson (SSCL)

DATE: Dec. 10, 1992

This design note is one of a series which represents the proceedings of the SDC solenoid subgroup meeting held in Japan on December 8-11, 1992. The plan and purpose of the meeting was to:

- Look at the prototype coil winding and honeycomb vessel R&D in Japan
- Reports of technical progress from each group
- Plan and schedule for the prototype magnet assembly and test
- Discussions on design of the SDC solenoid power supply
- Discussions on cryogenic design for the SDC solenoid
- **Discussions on responsibilities for the cryogenics fabrication**
- Response to the report of the DOE review sub-committee
- Publications and presentations of the technical progress

SDC Solenoid Subgroup Meeting in Japan

Status of SSCL / EFD

R. Richardson (SSCL)

Dec. 10, 1992

Superconducting Supercollider Laboratory Status

December 10, 1992
Place: KEK Japan
Robert A. Richardson

1. SSC Laboratory Status.

2. Physics Research Division/Experimental Facilities Department Organization in support of the Detector Collaborations.

3. Experimental Facilities Design and Construction status & Schedules.

4. SSC Documentation Requirements.

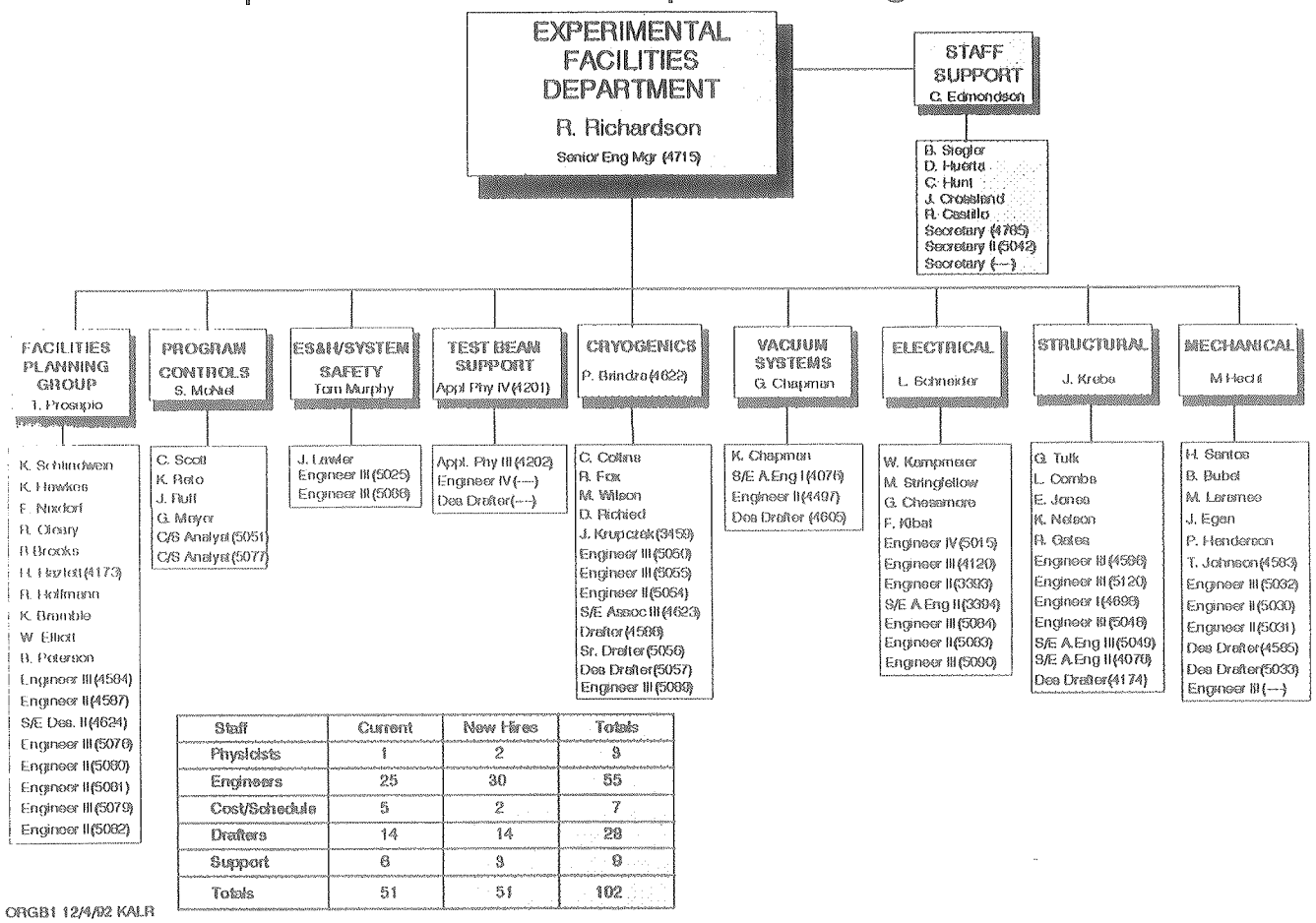
5. The SSC Design Review Process.

SSC Laboratory Status

- Magnet Development Laboratory building is completed for the Magnets division where spare SSC magnets are to be produced and magnets will be repaired.
- Accelerator Systems String Test ASST (ASST) was successfully completed on August 14, 1992.
- The Magnet Test Labratory facility to test Industry produced superconducting dipole magnets will be commissioned in March 93.
- The Linac is under construction.
- Some main Collider tunnel contracts have be bid and awarded and are under construction.
- Dipole contracts have been awarded.
- Experimental facilities are in design and infrastructure construction has started.

PHYSICS RESEARCH DIVISION

Experimental Facilities Department Organization



Staff	Current	New Hires	Totals
Physicists	1	2	3
Engineers	25	30	55
Cost/Schedule	5	2	7
Drafters	14	14	28
Support	6	3	9
Totals	51	51	102

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PHYSICS RESEARCH DIVISION
SDC EXPERIMENTAL FACILITIES STATUS

Schedules

- IR-8 Site Grading & Road Construction (Moving Dirt) underway now

- IR-8 Underground Hall-Shell

Title I Design 30% complete	Oct 92
Title II Design 60% complete	Nov 92
Title II Design 90% complete	Dec 92
Start Construction	June 93
Shell Construction complete	July 95

- IR-8 Underground Hall-Finish

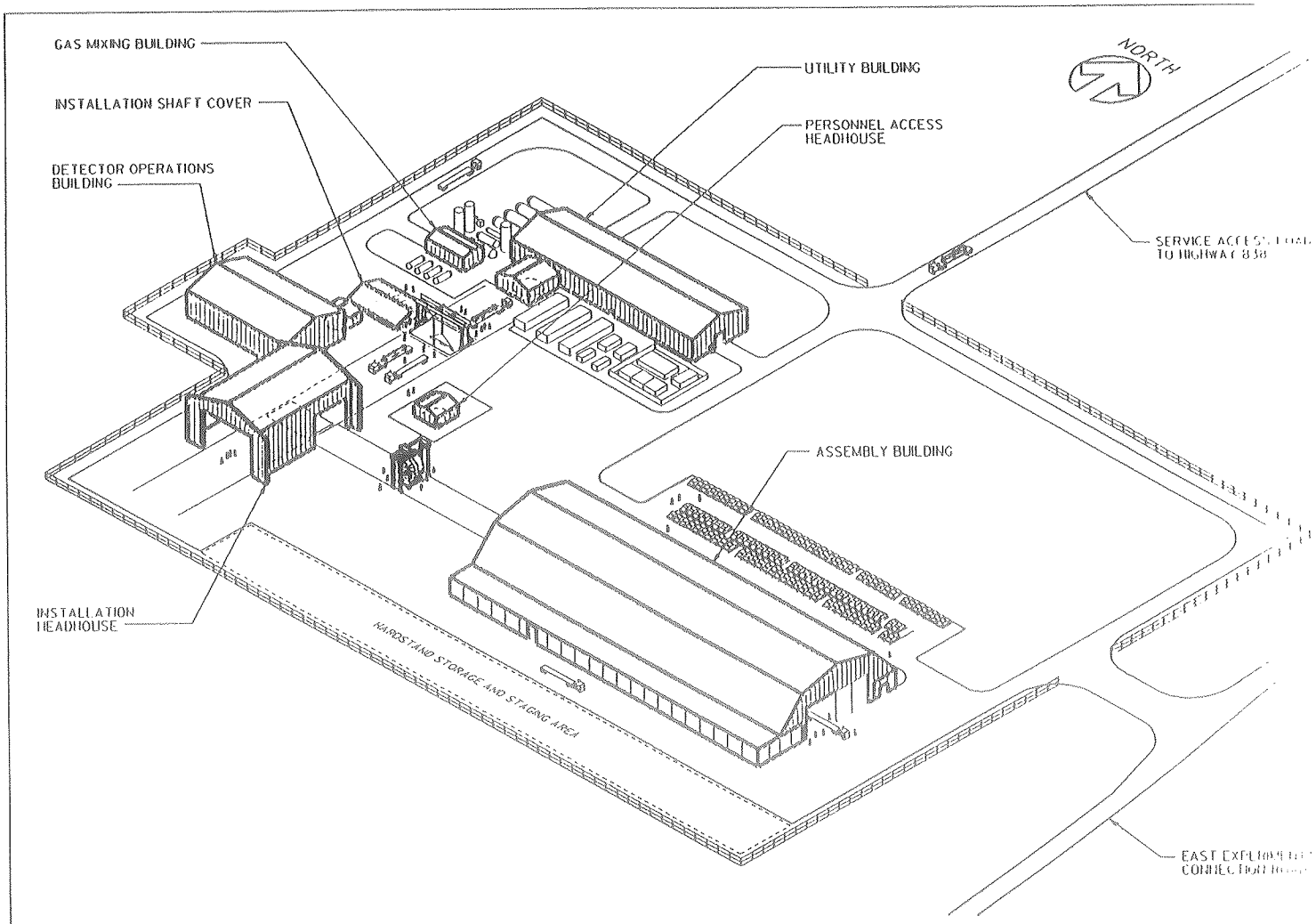
Title I Design 30% complete	Mar 93
Title II Design 60% complete	May 93
Title II Design 90% complete	Aug 93
Title II Design 100% complete	Sept 93
Start Construction	Jan 94
Construction complete	Oct 95

- IR-8 Assembly Building

TITLE II Design 60% complete	Nov 92
TITLE II Design 90% complete	Dec 92
Construction start	April 93
Construction complete (BOD)	June 94

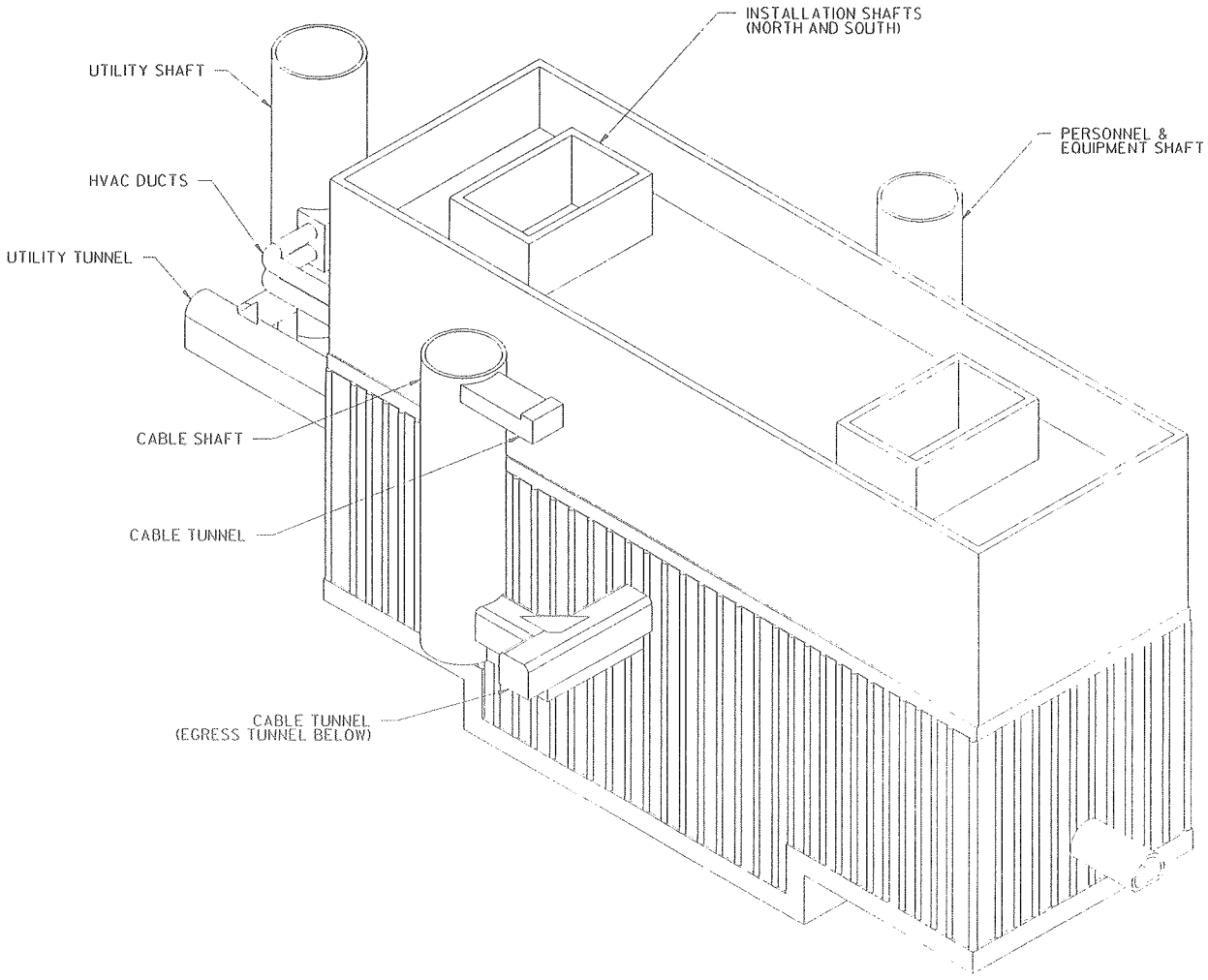
- IR-8 Utility Building

Title I Design 30%complete	Dec 93
TITLE II Design 100% complete	Aug 94
Construction start	Nov 94
Construction complete (BOD)	Nov 95



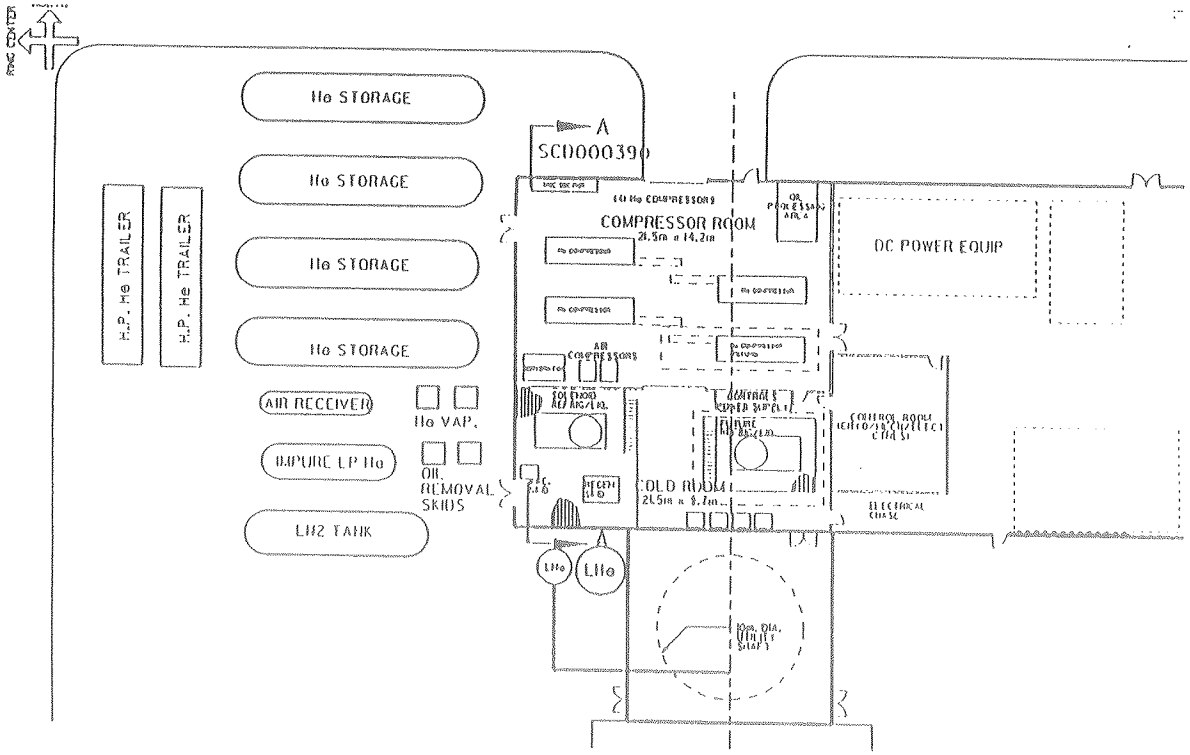
IR-8 SITE (SDC)

TVP/kh - 15 SEP 1992 - SCD-000245.003

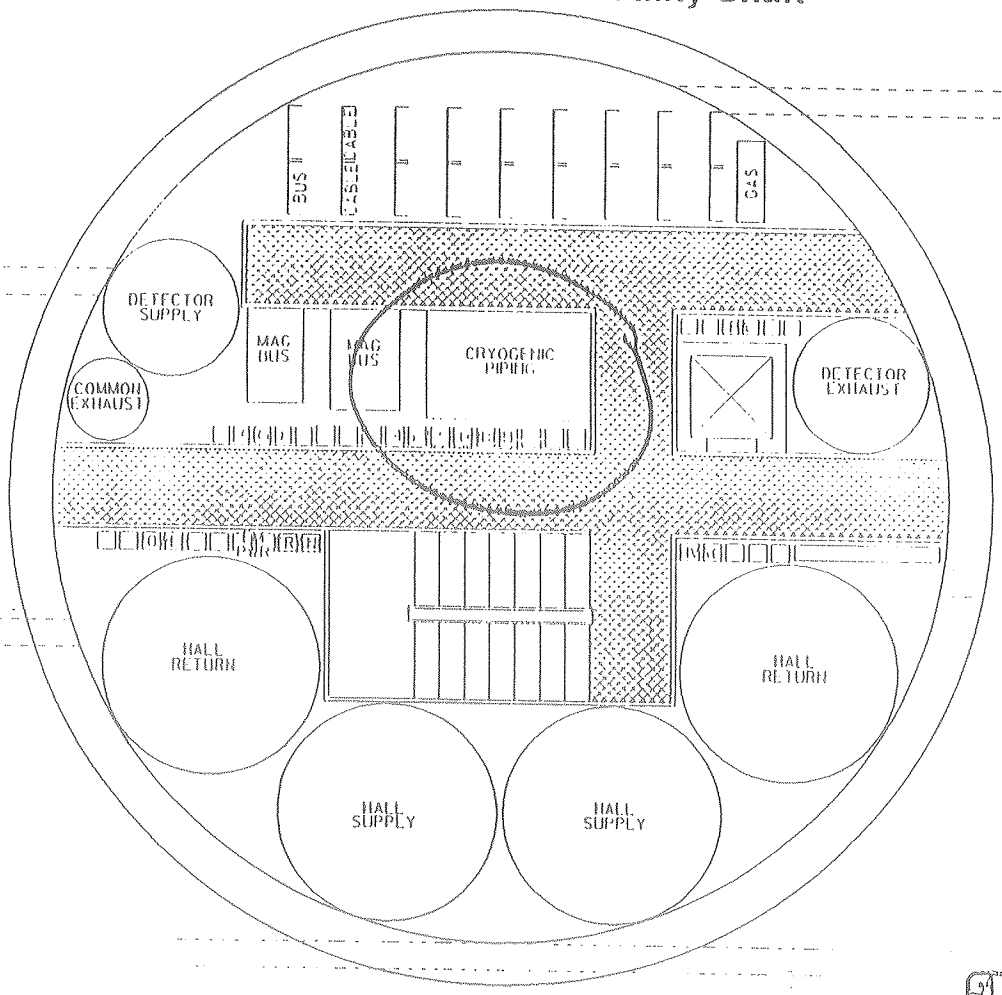


UNDERGROUND EXPERIMENTAL HALL

SDC Cryogenics Surface Facilities

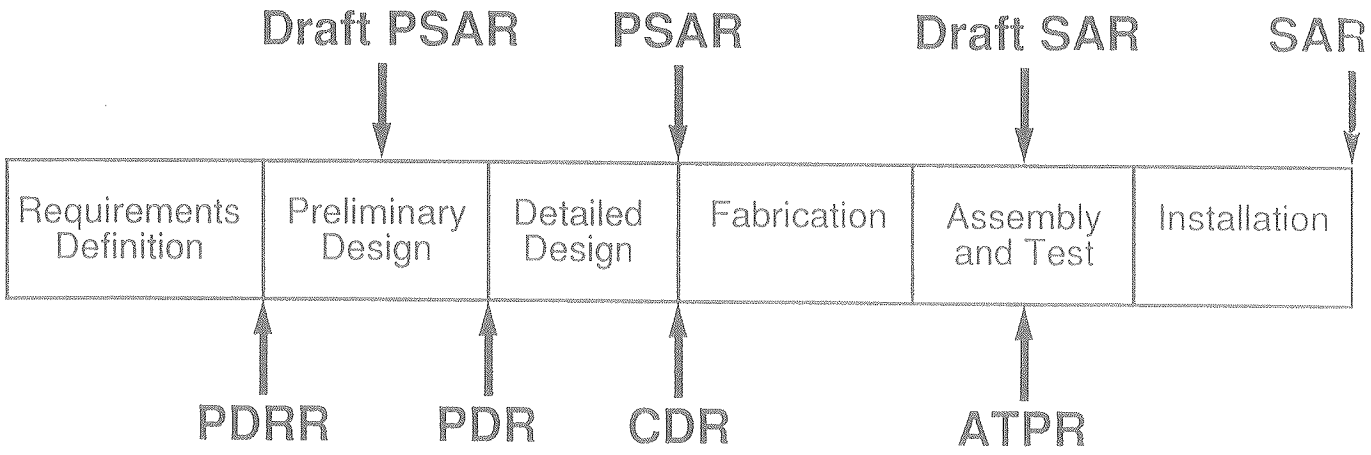


Cross Section of SDC Vertical Utility Shaft



SSC Documentation Requirements

Safety Documentation



Design Documentation

SuperCollider

The SSC Design Review Process

Preliminary Design Requirements Review
- *What do you want?*

Preliminary Design Review
- *Is this what you want?*

Critical Design Review
- *This is what it will be, O.K.?*

Acceptance Test Plan Review
- *This is how we know it's what you wanted, O.K.?*

DATA TO BE PRESENTED AT PDR

Preliminary Design Review (PDR)

The following items, where relevant, should be addressed during the PDR.

- Subsystem block and functional diagrams
- Equipment layouts and preliminary drawings
- Specifications and Codes which affect design/construction/ assembly/operation
- Environmental controls and thermal design aspects
- Power distribution and grounding
- Electromagnetic compatibility considerations
- Instrumentation, control, and diagnostic design approach
- Producibility and manufacturing considerations
- Preliminary parts lists
- Support system requirements and design approach
- Preliminary Development specifications
- Physics parameter modeling, test and simulation data
- Software Development Plan
- Software requirements specifications (Preliminary Design)
- Risk and abatement strategy for cost, schedule, and technical performance risks
- Draft interface control documents
- Design standardization and logistic considerations
- Trade and design studies
- Preliminary reliability, maintainability, and availability analyses
- Transportability, packaging and handling considerations (including electrostatic discharge protection)
- Status of Environmental, Health, and Safety analyses (The Draft Preliminary Safety Analysis Report (PSAR) is the basis.)
- Quality control planning
- Test methodology
- Schedules
- Problems and concerns
- Assembly and Installation design aspects

DATA TO BE PRESENTED AT CDR

Critical Design Review (CDR)

The following items should be addressed, to the extent possible, during the CDR. Review of the detail design drawing package is essential.

- Subsystem block and functional diagrams
- Drawing package (assembly drawings and majority of remaining drawings)
- Final parts lists
- Final development specifications, including Codes which affect the design/construction/assembly/operation
- Draft product specifications
- Final interface control documents
- Design analysis and engineering test data
- Software detailed design, database design, interface design, firmware support, and computer resources integrated support documents
- Logistic support considerations

- Transportability, packaging, and handling
- Standardization
- Support equipment requirements
- Spares requirements
- Calibration requirements

- Risk: cost, schedule and technical
- Plans for acquisition of parts, components, and materials needed for fabrication
- Production plans
- Design reliability and maintainability
- System safety status (The Preliminary Safety Analysis Report (PSAR) is due in this time period.)
- Quality control plans
- Test plans (hardware, software, other)
- Schedules
- Problems and concerns
- Assembly and Installation plans

DATA TO BE PRESENTED AT ATPR

Acceptance Test Plan Review (ATPR)

The following items should be addressed during the ATPR. Assurance that the acceptance tests are properly planned and adequate test resources have been allocated are the main points to be addressed.

- Acceptance Test Plan overview and status
- Tests planned or data analyzed to verify performance (including reliability, maintainability and availability)
- Tests planned in conjunction with post-test analyses confirm that environmental, health, and safety requirements are being met. (The Draft Final Safety Analysis Report (FSAR) is due in this time period.)
- Proper evaluation resources allocated
- ATP compatible with commissioning plans for detector
- Schedule
- Problems and concerns